

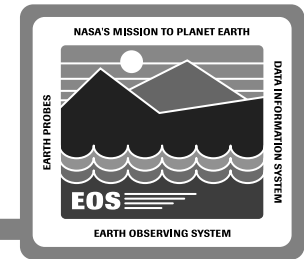


Management Subsystem Design

Gary Forman

19 January 1995

MSS Design Presentation



OVERVIEW

Gary Forman

MANAGEMENT APPLICATION

Yanamandra Sastry

CONFIGURATION MANAGEMENT

Alex Schuster

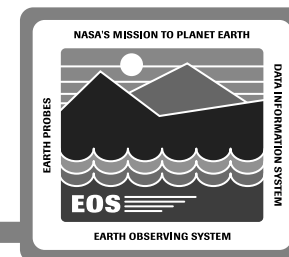
COMMON MANAGEMENT SERVICES

Alan Gary

MANAGEMENT AGENT

Dennis Kavanagh

Enterprise Management



**System
Managers
(Operators)**



**DAAC Manager
Maintenance Staff
Operations Staff
Flight Controllers
SMC Staff**



**Management
Applications**

Fault

CM

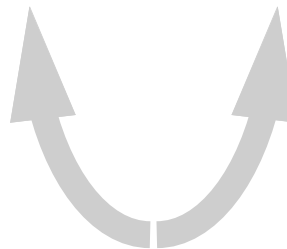
Security

Accountability

Performance

Policy

Common Management Services



Managed Objects

- **Devices**
- **Systems Software**
(including comm stacks)
- **Applications**

**Managed Object
“Agents”**

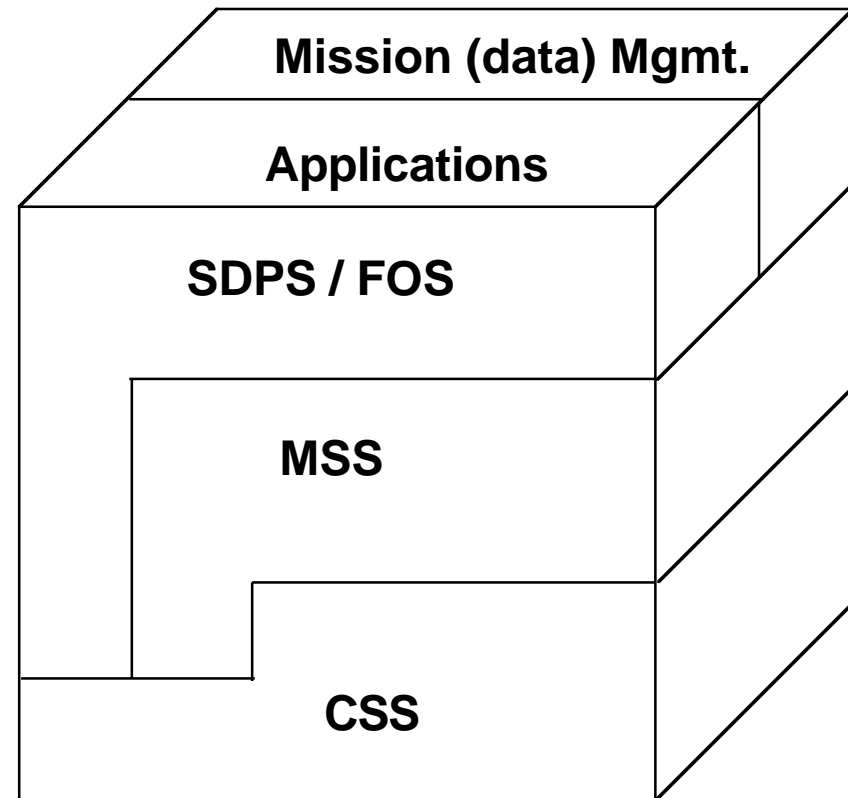
Management Communications & Protocol Services

Mission vs. Enterprise Management

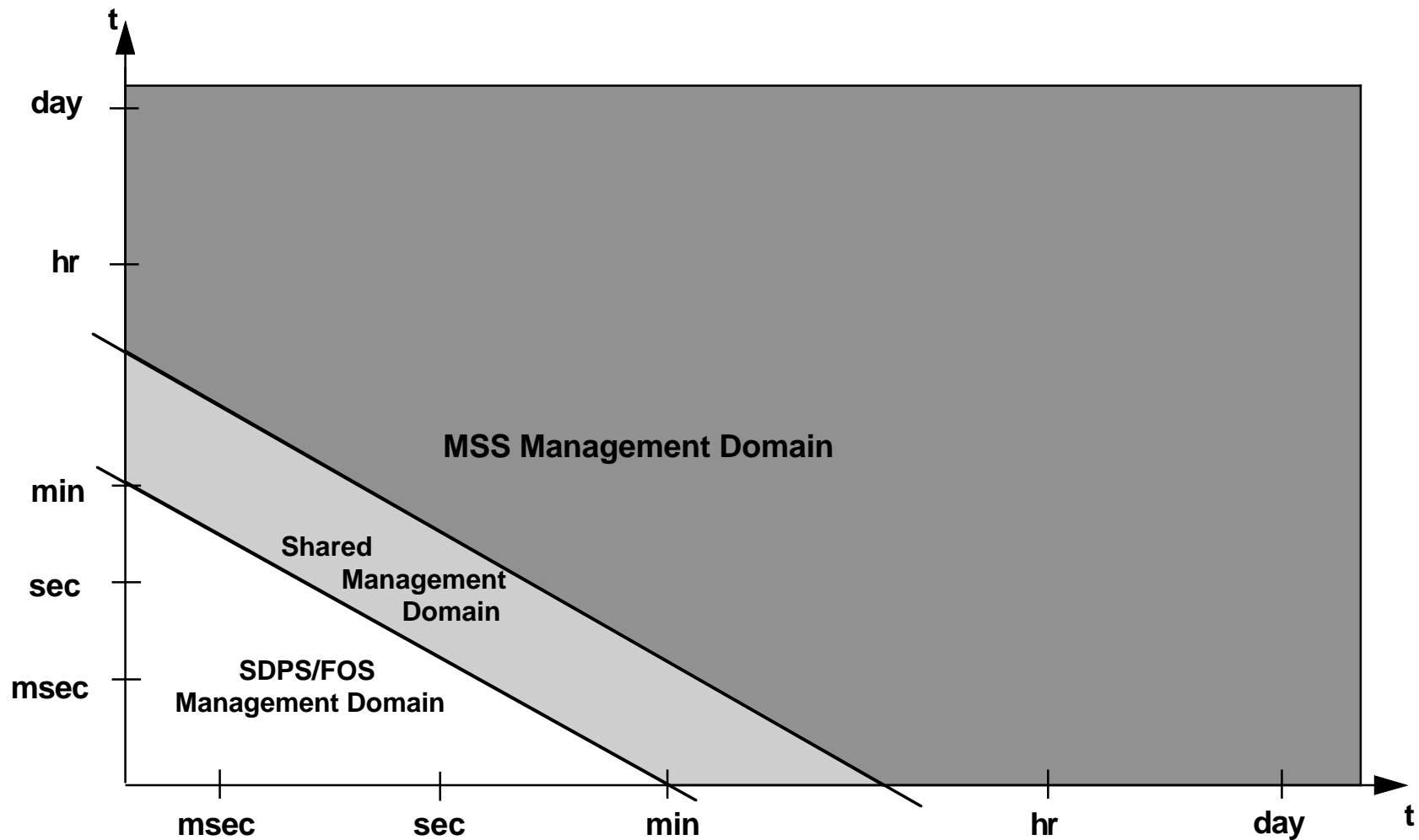
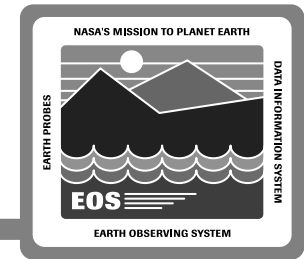


Enterprise management is system wide management of infrastructural components to multiple application domains

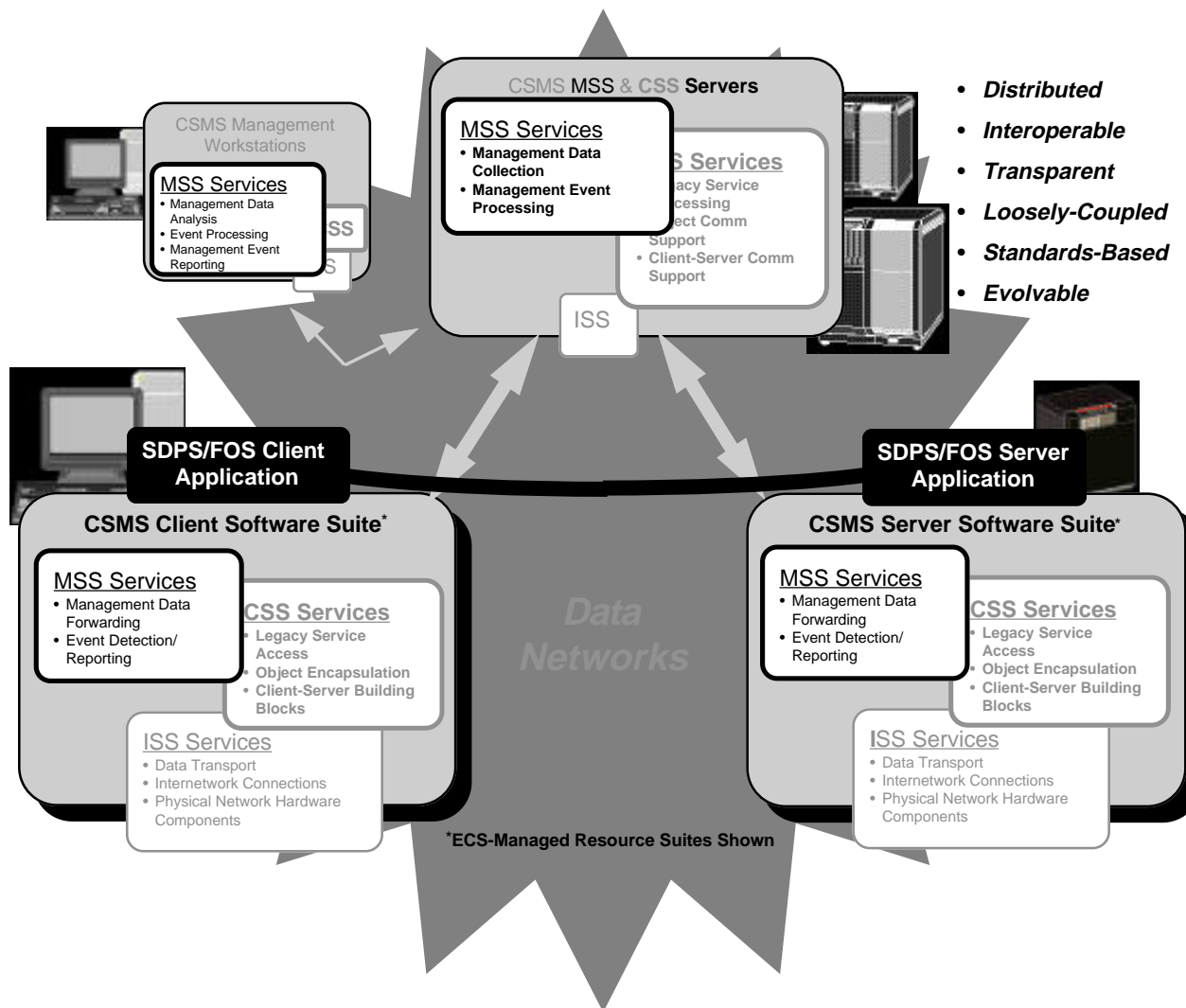
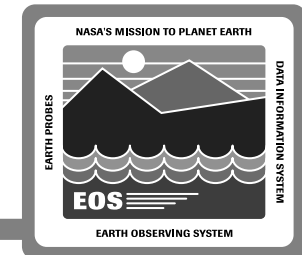
Mission management is management of major application domains (FOS flight operations or SDPS data)



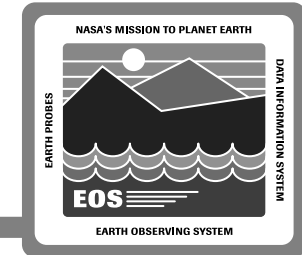
MSS vs. Segment Management Domains



MSS Context



Management Functional Distribution

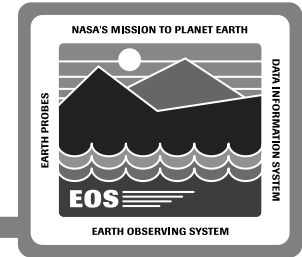


- **Sites Have Complete Control of Local Resources**
- **SMC Maintains System-Wide Integrity and Commonality Among Sites**

Service	Sites	SMC
Policy**	<ul style="list-style-type: none"> ➤ Iteration with SMC ➤ Procedure Development ➤ Procedure Implementation 	<ul style="list-style-type: none"> ➤ Flowdown from NASA and Tailoring to ECS Through Iteration with Sites ➤ Compliance Monitoring
Fault	<ul style="list-style-type: none"> ➤ Site Monitoring ➤ Detection ➤ Diagnosis ➤ Recovery 	<ul style="list-style-type: none"> ➤ System-Wide Fault Monitoring ➤ Fault Trend Analysis and Support
Security	<ul style="list-style-type: none"> ➤ Authentication & Authorization ➤ Intrusion Detection, Data Integrity ➤ Site Audits 	<ul style="list-style-type: none"> ➤ Policy Compliance Monitoring ➤ System-Wide Audits
Performance	<ul style="list-style-type: none"> ➤ Collect and Analyze Data ➤ Optimize/Tune to Service-Level Agreements (SLAs) ➤ Assess Site Trends/Capacity Planning 	<ul style="list-style-type: none"> ➤ System-Wide Trend Analysis/Capacity Planning ➤ Verification/Promulgation of SLAs
Accountability	<ul style="list-style-type: none"> ➤ User Registration ➤ Audit Trail 	<ul style="list-style-type: none"> ➤ Combined Audit Trail / Trend Analysis
CM	<ul style="list-style-type: none"> ➤ Site CM Baseline ➤ SW Configuration Management ➤ Change Request Management 	<ul style="list-style-type: none"> ➤ System CM Baseline Maintenance ➤ SW Configuration Management
Network Management Roles	<ul style="list-style-type: none"> ➤ Manage Site's ECS LAN(s) (ESN) ➤ Coordinate w/SMC on ECS WAN and External Provider I/Fs ESEN NSI 	<ul style="list-style-type: none"> ➤ Manage ECS WAN (ESN) ➤ Coordinate w/Sites on ECS WAN and External Provider I/Fs

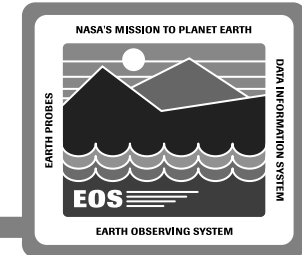
**** Policy supported through Office Automation Tools**

MSS Key Drivers



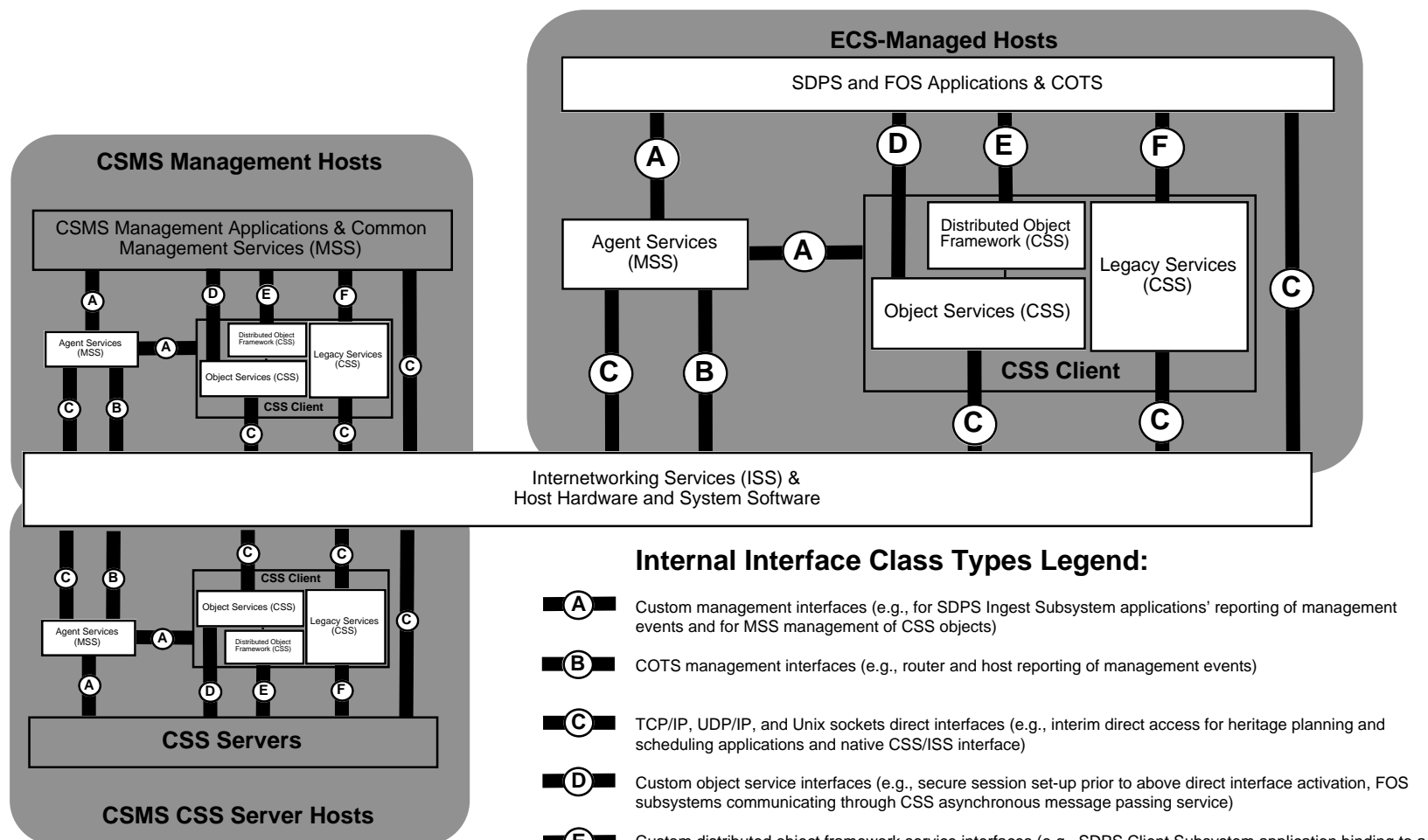
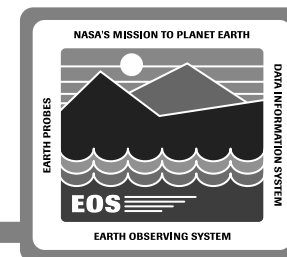
- **Autonomous management concept**
- **Policy flexible**
- **No single point of failure**
- **Scalability and evolvability**
- **Configurable**
- **High degree of automated monitoring**
- **Evolvable to SNMP2, CMIP, OMG CORBA**
- **Standards based**
- **COTS intensive (low risk)**
- **Common look and feel for operators**
- **Partitionable into domains**
- **System-wide monitoring and coordination**

Summary of PDR Trades and Analyses

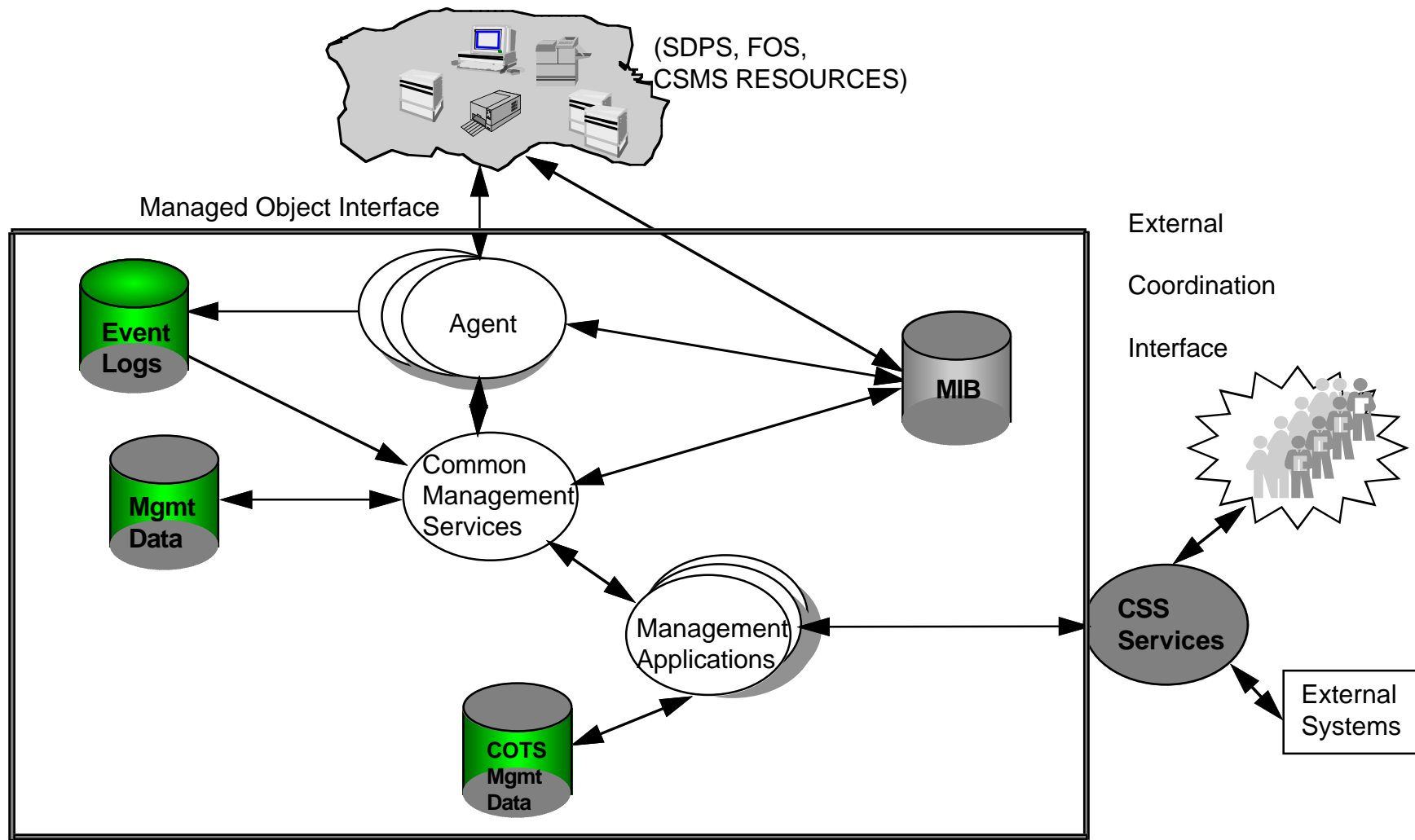
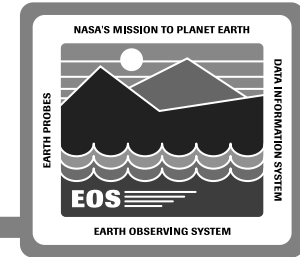


Analysis	Objective	Conclusion	Future Analysis
Management Framework Selection	Identify DME precursor products for Release A Enterprise Management	HP-OpenView Node Manager selected	Review for Release B and beyond, monitor industry trends
Management Agent Technology	Evaluate current agent technology and evolvability features	SNMP selected for Release A	Review for Release B, monitor OSI/CMIP and GDMO developments
Agent Configuration for a typical host	Identify the system manager/agent configuration for ECS host computers	SNMP master / sub-agent selected	Review Agent configuration for Release B
Management Data Archive	Evaluate use of SDPS data server to archive MSS management data	Short and intermediate stores at MSS, long term archive via SDPS	N/A
DBMS Technology selection	Select DBMS technology for CSMS management data	RDBMS selected as technology for CSMS	Monitor SDPS and FOS DBMS selections and revisit as final selections are made
MSS/CSS Server Integration	Determine feasibility of using CSS and MSS servers as backups	Common Backup provides best solution	N/A

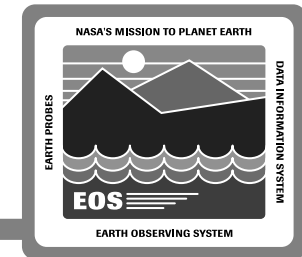
CSMS Internal Interfaces



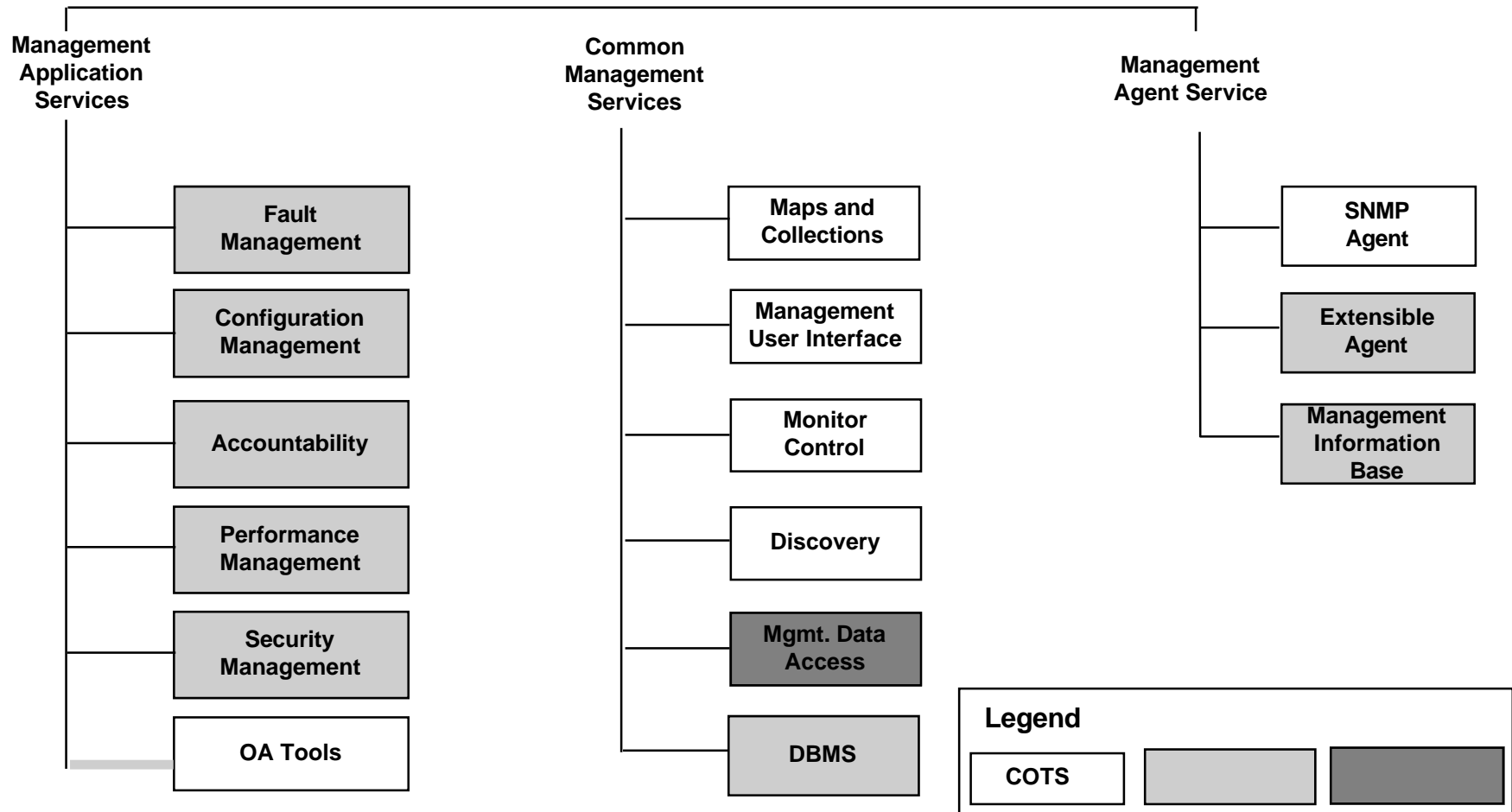
MSS Service Groupings and Data Stores



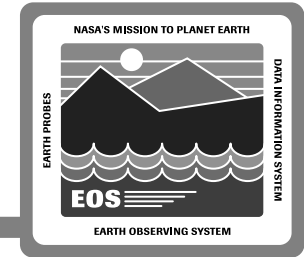
MSS Design Decomposition



Systems Management Subsystem (MSS)



MSS Design Presentation



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MSS Summary



- **MSS is COTS intensive (over 95% COTS for Release A)**
- **Candidate COTS packages identified / evaluated**
- **COTS selected for key areas**
 - **HP OpenView for Framework and Management Applications**
 - **ClearCase for Configuration Management**
- **Preliminary design complete for custom development**
 - **Management Data Access**
 - **Extensible Agent**
 - **Baseline Manager**
- **Design validation through selective scenarios and OPs Telecons**
- **Close coordination with FOS and SDPS on interfaces**